US005657652A

United States Patent [19]

Martin

[11] Patent Number: 5,657,652

[45] Date of Patent: Aug. 19, 1997

[54] **PIN TUMBLER CABINET DOOR AND DRAWER DEADLOCKING LATCH-LOCK**

[75] Inventor: **Frank J. Martin**, Seattle, Wash.

[73] Assignee: **Frank J. Martin Company**, Seattle, Wash.

[21] Appl. No.: **523,363**

[22] Filed: **Sep. 5, 1995**

[51] **Int. Cl.**[6] **E05B 65/46**

[52] **U.S. Cl.** **70/85**; 70/81; 70/107

[58] **Field of Search** ..... 70/78, 81, 82, 70/85, 86, 99, 100, 107, 110, 134, 141, 144, 150, 151 R, 379 R, 380, 371, DIG. 62; 292/147

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,046,630	7/1936	Jacobi	70/81
2,275,362	3/1942	Golden et al.	70/380 X
2,306,022	12/1942	Lach	70/81
3,316,001	4/1967	Russell et al.	70/150 X
3,621,685	11/1971	Sargent	70/107
3,672,714	6/1972	Schultz	70/107 X
3,769,822	11/1973	Yulkowski	70/107
3,824,817	7/1974	Orr	70/81
3,881,331	5/1975	Tranberg et al.	70/107
3,919,866	11/1975	Upschultz	70/81
4,012,928	3/1977	Dauenbaugh	70/81
4,031,725	6/1977	Reid	70/107
4,583,382	4/1986	Hull	70/107
4,870,841	10/1989	Cudd	70/107
5,469,723	11/1995	Utwin et al.	70/107

OTHER PUBLICATIONS

Olympus Lock Product Catalog, Apr., 1992, p. 6—Deadlocking Commercial Drawer Lock—850SC.

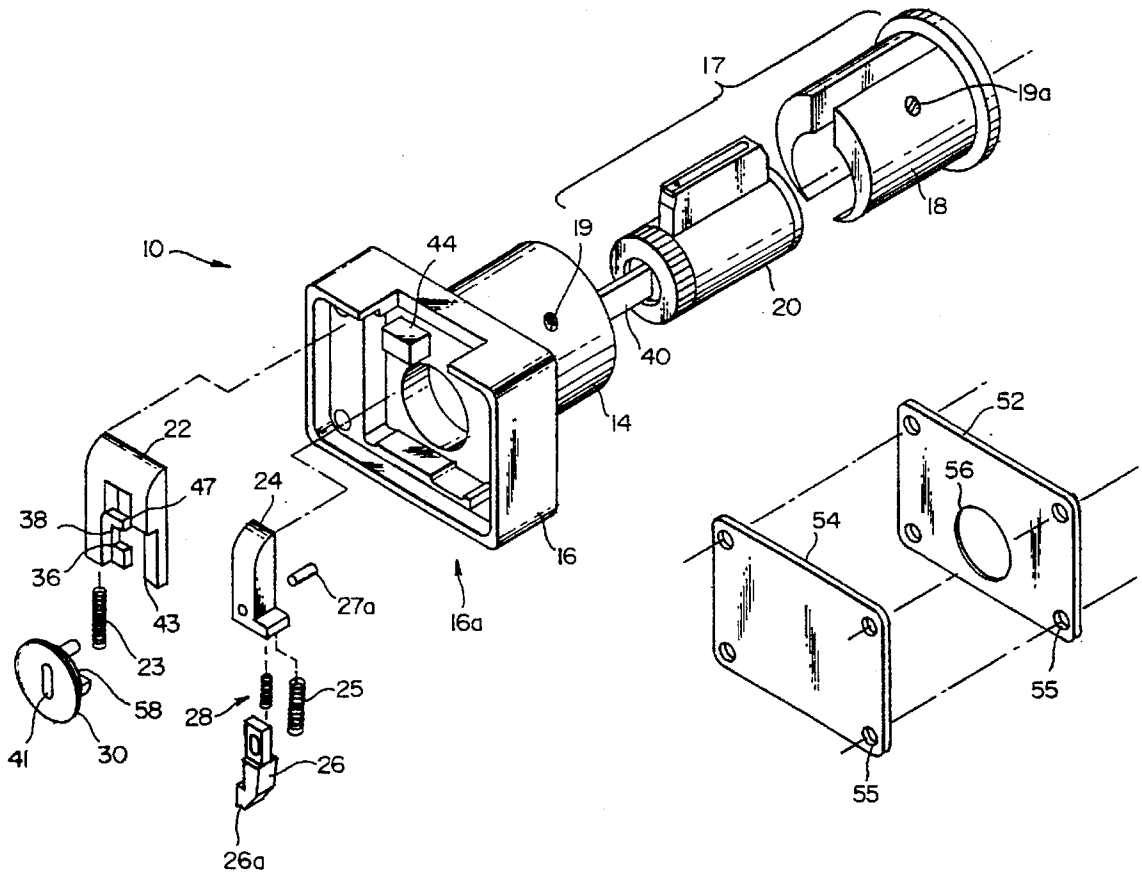
Primary Examiner—Suzanne Dino

Attorney, Agent, or Firm—Richardson & Folise

[57] **ABSTRACT**

A deadlocking, self-latching lock for cabinet doors and drawers employs a unitary shell with an adjacent main bolt and self-latching deadlocking bolt. A pivoting locking arm prevents external retraction of the main bolt without the use of a key.

7 Claims, 2 Drawing Sheets



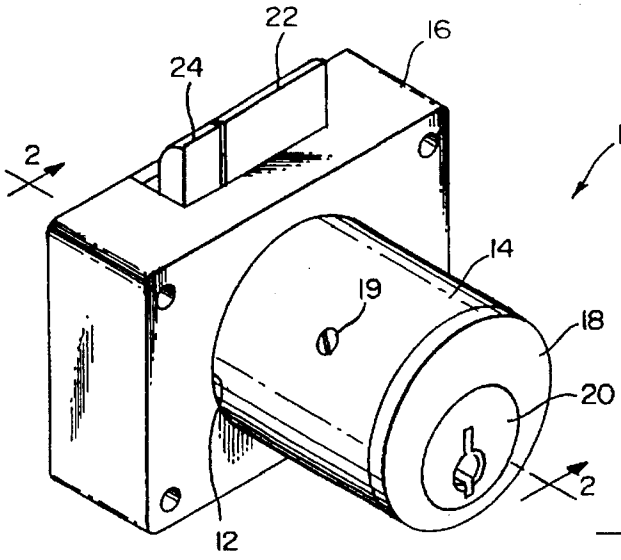


FIG. 1

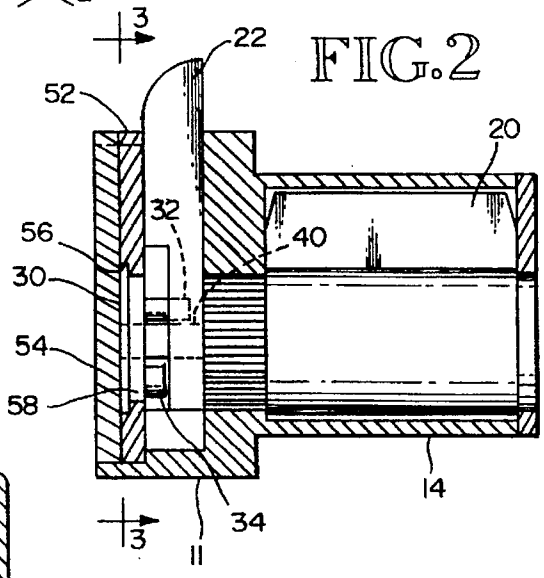


FIG. 2

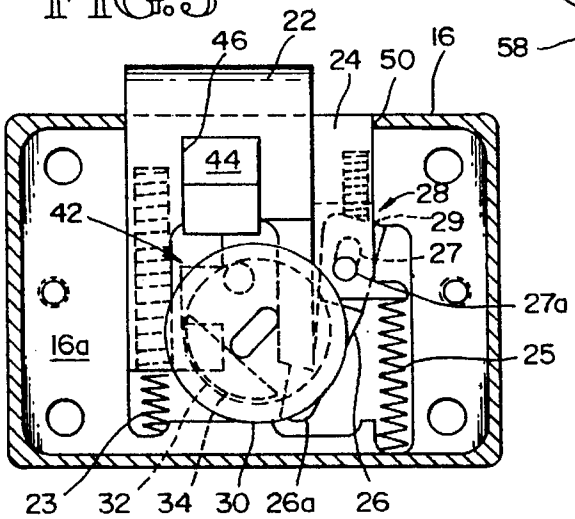


FIG. 3

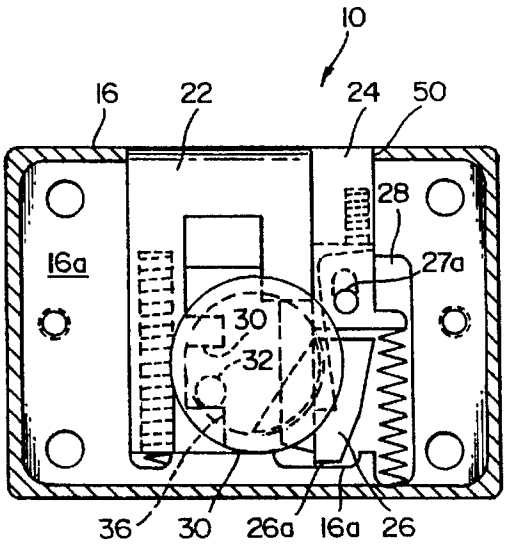


FIG. 4

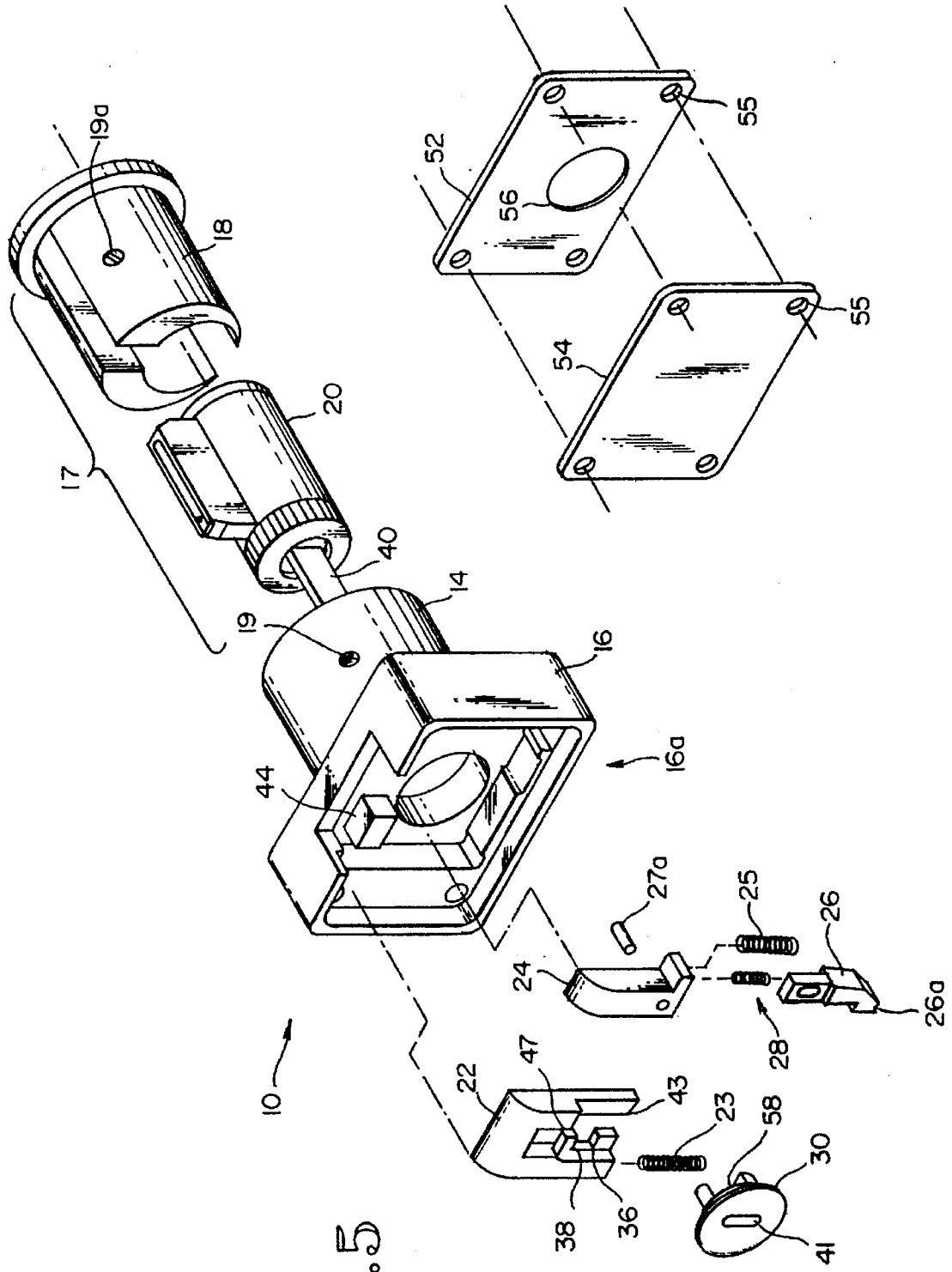

19a
18
17
20
40
14
19
16
16a
44
52
56
55
54
55
27a
25
26
24
26a
28
10
22
47
43
23
58
30
38
36
41

FIG. 5

PIN TUMBLER CABINET DOOR AND DRAWER DEADLOCKING LATCH-LOCK

TECHNICAL FIELD

The invention relates to pin tumbler cabinet door and drawer locks. More specifically, the invention relates to self-latching locks for cabinet doors and drawers.

BACKGROUND OF THE INVENTION

Deadlocking self-latching locks for entryways have been available for some time for use on exterior home doors, and office doors in the United States. Locks of this type employ a spring-mounted main bolt having one curved or sloping face, and a cooperative deadlocking bolt which when depressed prevents retraction of the main bolt. In a lock of this type, a lock strike plate on the door jam permits passage of the main bolt therethrough, but depresses the deadlocking bolt. The door can thus be closed and locked from the outside without the use of a key. However, it cannot be reopened from the outside without the use of a key.

Many self-latching locks for cabinet doors and drawers have also been developed. However, pin tumbler deadlocking self-latching cabinet door and drawer locks are not generally available. U.S. Pat. No. 4,012,928 to Dauenbaugh and assigned to Keystone Consolidated Industries, Peoria, Ill., describes a self-latching, mortise-type cabinet lock for use in desk drawers and the like. The latch on this lock is not of the deadlocking type found in entryway doors. Non-deadlocking latch locks can be defeated by inserting thin material between the interfacing bolt and striker surfaces, such as a credit card to depress the latch bolt against its main spring. For these reasons, self-latching cabinet door and drawer locks have not been applied to security installations.

There are currently very large quantifies of dead bolt pin tumbler cabinet door and drawer locks installed in the United States. Locks of this type do not apply a spring bias to the bolt. Rather, the bolt is driven by rotation of a plug within a cylinder plug assembly. If the cylinder and plug assembly is of the pin tumbler variety, these locks are highly secure and as shown by the line of locks manufactured by Olympus Lock, Inc., Seattle, Wash. can be readily rekeyed. Nevertheless, a key is required to both lock and unlock cabinet doors and drawers fitted with locks of this type. It would be extremely advantageous to apply the security of a dead bolt-type cabinet door and drawer lock, with the convenience of a deadlocking self-latching entryway door lock.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a deadlocking latch lock for pin tumbler cabinet doors and drawers.

It is a further object of the invention to achieve the above object with a deadlocking latch lock having the same dimensions as dead bolt-type cabinet door and drawer locks so that existing installations can be refitted with the new lock with the deadlocking feature.

The invention achieves these objects, and other objects and advantages which will become apparent from the description which follows, by providing a self-latching dead lock for cabinet doors and drawers having a spring-loaded, self-latching main bolt adjacent to a spring-loaded, self-latching deadlocking bolt. A locking mechanism automatically interconnects the deadlocking bolt and the main bolt so that when the main bolt is extended and the deadlocking bolt depressed, the main bolt is locked in an extended position. The locking mechanism is released by rotation of a key and a plug associated therewith.

In a preferred embodiment of the invention, a cam mechanism is journaled for rotation with the plug. The cam mechanism has a portion thereon for driving the main bolt, and a disengaging segment thereon for disengaging the locking mechanism on the deadlocking bolt from the main bolt so that the main bolt can be retracted by operation of a key.

In order to accommodate the dimensions of a standard deadlock cabinet door and drawer lock (i.e. of the non self-latching type), the cam mechanism is positioned behind the main bolt so that the self-latching main bolt is longitudinally positioned with respect to the lock body at the same position of a conventional non self-latching dead bolt. In this way, the invention is interchangeable with existing conventional cabinet door and drawer locks of similar size.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an environmental, isometric view of a deadlocking latch lock of the present invention.

FIG. **2** is a cross-sectional, elevational view of the lock shown in FIG. **1** taken along lines **2—2** of FIG. **1**.

FIG. **3** is a cross-sectional, elevational view taken along lines **3—3** of FIG. **2** showing the main bolt of the lock in an extended position, and a deadlocking bolt of the invention in a retracted position so as to lock the main bolt.

FIG. **4** is a sectional, elevational view similar to FIG. **3** in which a cam mechanism has been counter-rotated by a key (not shown) to retract the main bolt and disengage a locking mechanism therefrom.

FIG. **5** is an exploded, isometric rear view of the lock.

BEST MODE FOR CARRYING OUT THE INVENTION

A deadlocking latch lock for cabinet doors and drawers is generally indicated at reference numeral **10** in FIG. **1**. The lock is preferably provided with a unitary shell **12** manufactured from a casting of brass or other suitable material. As best seen in FIG. **5**, the shell has an elongated, cylinder housing portion **14**, and an integral bolt housing portion **16**. The cylinder housing portion is smooth and hollow and thus adapted for receiving a cylinder and plug assembly **17** in a forwardly direction. The cylinder and plug assembly may be of many conventional forms and is preferably of the type having a shell or cylinder **18** for housing a plug **20** which is commonly referred to as the "insert cylinder" type. It is to be understood that other types of cylinder and plug assemblies, such as the interchangeable core type, and other pin tumbler cylinder and plug assemblies may be substituted, as will be apparent to those of ordinary skill in the art.

The cylinder housing portion **14** is preferably provided with an aperture **19** which is registerable with a corresponding aperture **19***a* on the cylinder for receiving a set screw as set forth in more detail in U.S. Pat. No. 4,899,563 which is titled "Re-keyable Pin Tumbler Cabinet Drawer Lock and Pin Tumbler Cabinet Door Lock," the disclosure of which is incorporated herein by reference. Alternatively, a push button release mechanism may be employed, as set forth in further detail in U.S. Pat. No. 5,121,619 titled "Speed Release Mechanism for Cylinder and Plug Assembly for Use with Cabinet Locks," the disclosure of which is incorporated herein by reference.

With reference to FIG. **1**, the bolt housing portion **16** reciprocally receives a self-latching type main bolt **22** having a curved face thereon for engagement with a strike (not shown) on an opposing surface such as a doorjamb or drawer sill. The main bolt **22** is biased outwardly by a main bolt compression spring **23**, best seen in FIG. **3**. The bolt housing portion **16** also receives a self-latching type deadlocking bolt **24** also having a curved face thereon positioned adjacent to the main bolt **22** for reciprocating motion within the housing. The deadlocking bolt is also outwardly biased by a separate deadlocking bolt compression spring **25**. It is apparent that upon forcing the curved surfaces of the main and deadlocking bolts against a suitable strike, the bolts will depress their respective compression springs until they fall behind the strike surface into an appropriate mortise, whereupon the compression spring **23** will extend the main bolt into an outwardly, locked position. To prevent retraction of the main bolt other than by use of a suitable key, the portion of the strike which engages the deadlocking bolt **24** is not provided with a mortise (or cutout). Thus, the deadlocking bolt **24** remains in the retracted position.

A locking arm **26** is pinned to the deadlocking bolt **24** by a pin **27***a* through an oblong aperture **27** on the locking arm. A spring-biased mechanism **28** acts against an eccentrically located surface **29** of the locking arm **26**, thereby biasing the locking arm to rotate in a clockwise direction. A free end **26***a* of the locking arm therefore engages a slanted surface of the main bolt **22**, preventing the main bolt from being retracted by an external force due to interference of the free end **26***a* of the locking arm with the interior **16**a of the bolt housing **16**. The aperture **27** is elongated so that the free end **26***a* of the locking cam can rotate into a locking position without interference from the interior of the bolt housing **16**, while still being capable of bottoming out against the bottom of the housing interior if the main bolt **22** is depressed.

In order to release the main bolt, the lock **10** is provided with a cam mechanism **30** having a main bolt driving pin **32** extending longitudinally therefrom and a crescent-shaped locking-arm disengaging segment **34** positioned thereon. When counter-rotated (e.g. in a counterclockwise direction) from the position shown in FIG. **3** to the position shown in FIG. **4**, the disengagement segment pushes the locking arm **26** out from underneath the main bolt **22** while the driving pin **32** bears against a retracting surface **36** of the main bolt to retract the bolt against the urging of its compression spring **23**. Conversely, the main bolt **22** can be extended by rotating the cam mechanism in the clockwise direction as shown in FIGS. **3** and **4**, so that the driving pin **32** urges against an extending surface **42** of the bolt **22** as shown in FIG. **3** to extend the bolt and permit the locking arm **26** to reengage the slanted surface of the bolt, thus locking the bolt in the extended position.

In order to rotatably connect the cam mechanism **30** with the plug **20**, a tailpiece **40** is engaged with the plug in the conventional manner as shown in FIG. **5**. The tailpiece is of the blade type and engages a slot **41** in the cam **30**. The main bolt **22** is provided with a main aperture **43**, allowing passage of the tailpiece therethrough. By placing the cam mechanism behind the bolt **22** as shown in FIG. **5**, the main bolt and deadlocking bolt can be positioned in the same plane as is a conventional non self-latching deadlocking bolt. Thus, the lock **10** can be retrofitted into existing installations employing conventional deadlocking cabinet door and drawer locks. This structural characteristic is highly advantageous from a commercial point of view.

The bolt housing portion **16** can preferably be provided with a guide portion **44** for interaction with guide surfaces **46**, **47** on the main bolt to guide its reciprocal motion into and out of the bolt housing. The main bolt itself, along with an interior wall **50** of the bolt housing, guides the reciprocal motion of the deadlocking bolt.

As best seen in FIGS. **2** and **5**, a rear portion of the bolt housing **16** is closed by a cam bearing plate **52** and a back plate **54**. Both the cam bearing plate and the back plate have apertures **55** therein for mating with corresponding apertures in the bolt housing for accepting the conventional cabinet mounting screws. In addition, the cam bearing plate **52** has a two-step main aperture **56**, best seen in FIG. **2**, for providing a rotational bearing surface for a raised peripheral rim **58** on the cam mechanism. The step shape of the aperture also forms a forward thrust bearing for the cam mechanism **30**. The back plate **54** provides a rearward thrust bearing for the cam mechanism.

Those of ordinary skill in the art will conceive of other embodiments of the invention which conform to the basic spirit of the disclosure above. The invention is therefore not to be limited by the above disclosure but is to be determined in the scope by the claims which follow.

I claim:

1. A deadlocking latch lock for cabinet doors and cabinet drawers, comprising:

a unitary shell having an elongated cylinder housing portion extending from a bolt housing portion, the cylinder housing portion removably retaining a cylinder and a rotatable plug as an assembly, the bolt housing portion receiving a reciprocal main bolt;

a retractable main bolt spring-biased to an extended position;

a retractable deadlocking bolt supported within the bolt housing portion, adjacent to the main bolt and spring-biased to an extended position;

only one locking arm directly pivotally connected to the deadlocking bolt and having an engaged position with respect to the main bolt to prevent retraction of the main bolt and a disengaged position with respect to the main bolt to allow retraction of the main bolt;

a spring-bias mechanism for biasing the locking arm to the engaged position with the main bolt for preventing retraction of the main bolt when the deadlocking bolt is depressed; and,

a cam mechanism journaled for rotation with the plug, the cam having a main bolt driving pin extending therefrom and engageable with the main bolt and a peripheral locking arm disengagement segment for disengaging the locking arm from the main bolt upon rotation of the plug, whereby rotation of the plug to a first position disengages the locking arm and further rotation to a second position retracts the main bolt.

2. The lock of claim **1**, wherein the plug defines a longitudinal lock axis and wherein the plug has a tailpiece extending longitudinally into the bolt housing portion, wherein the main bolt defines an aperture for passage of the tailpiece therethrough, and wherein the cam mechanism is connected to the tailpiece, is journaled for rotation within the bolt housing, and is located longitudinally behind the main bolt.

3. The lock of claim **1**, wherein the cylinder housing defines a longitudinal axis and the main bolt is located intermediate the cam mechanism and the plug and is within the bolt housing portion.

4. The lock of claim **3**, wherein the bolt defines a main aperture for passage therethrough of a tailpiece rotatably interconnecting the cam mechanism with the plug.

5. The lock of claim 1, wherein the locking arm defines an oval aperture for receipt of a cylindrical pin attached to the deadlocking bolt to provide relative longitudinal movement between the deadlocking bolt and the locking arm.

6. A deadlocking latch lock for cabinet doors and drawers, comprising:

an elongated cylinder housing portion and a bolt housing portion, the cylinder housing portion removably retaining a cylinder and plug assembly;

a retractable main bolt received in the bolt housing portion and spring-biased to an extended position;

a retractable deadlocking bolt supported within the bolt housing portion, adjacent to the main bolt and spring-biased to an extended position;

a single locking arm directly pivotally connected to the deadlocking bolt and having an engaged position with respect to the main bolt to prevent retraction of the main bolt and a disengaged position with respect to the main bolt to allow retraction of the main bolt;

a spring-bias mechanism for biasing the locking arm to the engaged position with the main bolt for preventing retraction of the main bolt when the deadlocking bolt is depressed; and,

a cam mechanism journaled for rotation with a plug of the cylinder and plug assembly, the cam having a main bolt driving pin extending therefrom and engaged with the main bolt and a peripheral locking arm disengagement segment for disengaging the locking arm from the main bolt upon rotation of the plug, whereby rotation of the plug to a first position disengages the locking arm and further rotation to a second position retracts the main bolt.

7. The lock of claim 6, wherein the plug defines a longitudinal lock axis and wherein the plug has a tailpiece extending longitudinally into the bolt housing portion, wherein the main bolt defines an aperture for passage of the tailpiece therethrough, and wherein the cam mechanism is connected to the tailpiece, is journaled for rotation within the bolt housing, and is located longitudinally behind the main bolt.

* * * * *